M-series Digital Recorder
User Manual

Product ranges covered by this manual

Vi-M1	Vi-M2
Vi-M3	**Vi-M4**

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1 Start Here

Please fill in the warranty fax-back form on page 51 and return it to Videoswitch

- The Vi-M1, Vi-M2, Vi-M3 and Vi-M4 digital recorders from Videoswitch are part of the M-series range
- These products are designed to be easy to use whilst offering high quality digital video recording and playback, primarily for CCTV security applications.
- The video images from all connected cameras are continuously recorded onto the built-in hard drives. When the drives are full, the M-series keeps on recording, overwriting the oldest images.
- Images are retained for a specified user programmable number of days, typically 31. All images recorded within the period will be available for replay. Older image are no longer available.
- Several methods are provided for finding the recorded images you want quickly, including date/time searches and activity or alarm event searches
- The built-in DVD writer allows a selected part or parts of the recorded information to be written onto a DVD or CD, typically to back-up an incident for use as evidence by the Police.
- A USB interface allows incidents to be backed up to USB memory sticks as an alternative to DVD or CD
- The recording process continues all the time, even when playing back or backing up incidents
- Dual channel audio recording is standard on the M-series
- Ethernet is also a standard feature allowing remote viewing via a local area network (LAN) or via Broadband Ethernet
- Multiple Vi-M3 and Vi-M4 DVRs may be cascaded to cater for larger numbers of cameras. Build in matrix switching combines monitor outputs so that the group of DVRs can drive one (BNC) main monitor and 3 independent spot monitors.
- Software updates may be installed via CD, USB memory stick or via ethernet

Note:

This manual covers a range of products and therefore describes features that do not exist in all models.

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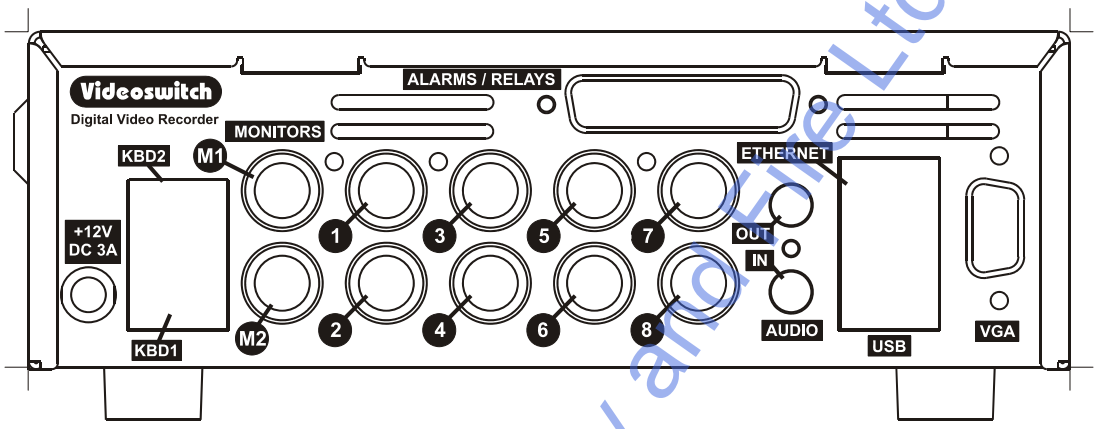
1.1 Connecting Up the Vi-M1

For a standard digital recording system you will need

- The Vi-M1 recorder
- Some cameras with lenses
- A video monitor (with BNC composite video input) or a VGA monitor
- BNC cables



- Connect the monitor output (M1) of the Vi-M1 to a Video Monitor using a BNC cable. Alternatively or additionally, connect a VGA monitor to the VGA output
- Make sure that the monitor termination is switched on (i.e. to 75 Ohms)
- On 8-camera models, a spot monitor may also be connected, to output M2
- Connect a camera to Camera Input 1 on the Vi-M1 using a BNC cable
- Connect further cameras to Inputs 2,3,4 etc
- Make sure that the mains supply is rated at the correct mains voltage. In UK and Europe this is normally 230Vac
- Connect the mains power using the mains cable provided

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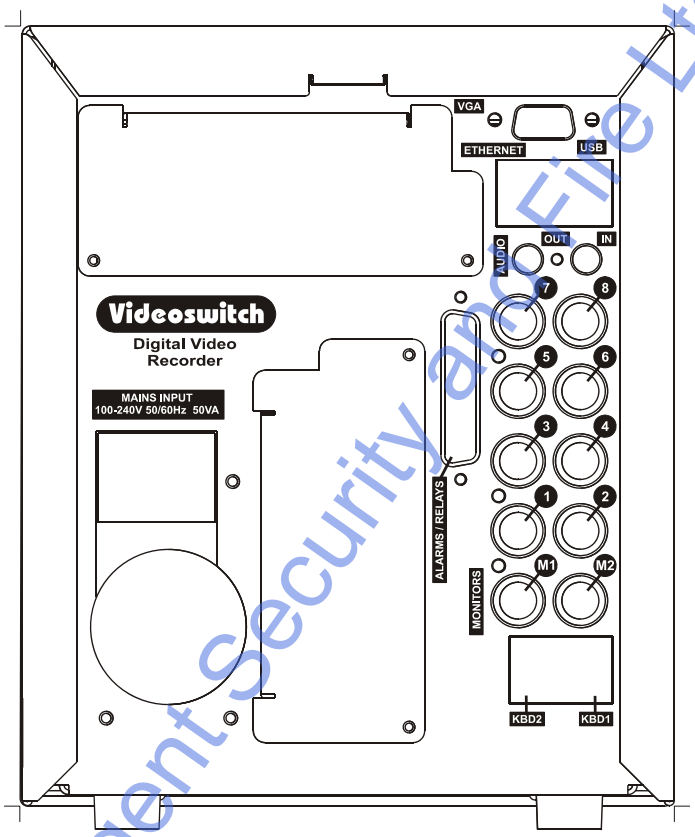
1.2 Connecting Up the Vi-M2

For a standard digital recording system you will need

- The Vi-M2 recorder
- Some cameras with lenses
- A video monitor (with BNC composite video input) or a VGA monitor
- BNC cables



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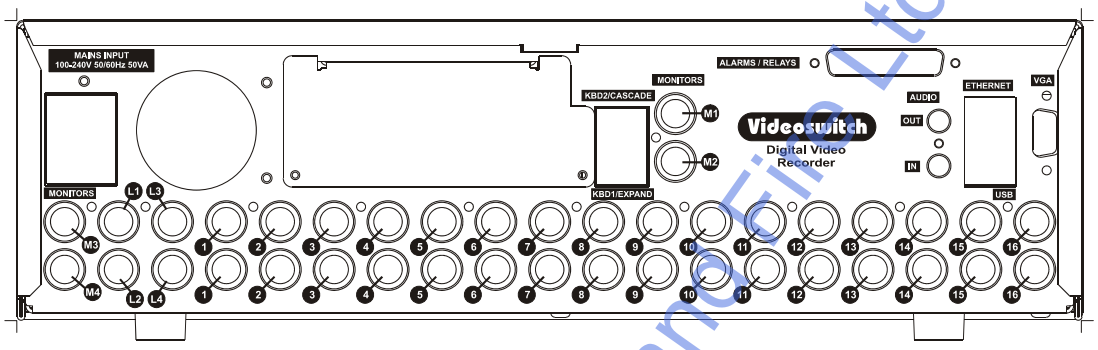
- Connect the monitor output (M1) of the Vi-M2 to a Video Monitor using a BNC cable. Alternatively or additionally, connect a VGA monitor to the VGA output
- Make sure that the monitor termination is switched on (i.e. to 75 Ohms)
- On 8-camera models, a spot monitor may also be connected, to output M2.
- Connect a camera to Camera Input 1 on the Vi-M2 using a BNC cable
- Connect further cameras to Inputs 2,3,4 etc
- Make sure that the voltage select switch (if present) is set to suit the mains supply. The setting required in UK and Europe is normally 230Vac
- Connect the mains power using the mains cable provided

1.3 Connecting up the Vi-M3 & Vi-M4

For a standard digital recording system you will need

- The Vi-M3 recorder
- Some cameras with lenses
- A video monitor (with BNC composite video input) or a VGA monitor
- BNC cables



- Connect the monitor output (MAIN) of the Vi-M3 to a Video Monitor using a BNC cable. Alternatively or additionally, connect a VGA monitor to the VGA output
- Make sure that the monitor termination is switched on (i.e. to 75 Ohms)
- Up to 3 other spot monitors may be connected to outputs M2, M3 and M4 (or 2 spot monitor on 12-camera models)
- Connect a camera to Camera Input 1 on the Vi-M3using a BNC cable
- Connect further cameras to Inputs 2,3,4 etc
- Make sure that the voltage select switch (if present) is set to suit the mains supply. The setting required in UK and Europe is normally 230Vac.
- Connect the mains power using the mains cable provided

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1.4 Setting Date/Time

For proper operation of the M-series DVR Digital Recorder it is essential that the date and time are set correctly.

If the system clock has an invalid date or time when the M-series DVR is powered up or at any time during operation, the displayed date and time in live mode will replaced by dashes.

If the clock needs setting, refer to section 1.1.7 page 21.

Note that the time is automatically adjusted forwards or backwards by an hour at the appropriate dates to take account of British Summertime (daylight saving) so no user action is required.

1.5 Recording

Once the Date/time is set the M-series DVR Digital Recorder should now be fully operational and recording images from all connected cameras. The default image retention period is 31 days unless set otherwise in the menu.

1.6 Routine Checks

If the M-series DVR is *not* recording, the message **RECORDING STOPPED** will be displayed on the video monitor. This should only happen if there is no video, if no hard drive is fitted or if it is faulty, or if record timers have been set to disable recording. If recording stops when is should not, a critical alert will occur, displayed as a red message on the screen. This indicates that there may be a fault with the DVR or with one of its hard drives.

Although the system is intended for continuous un-attended operation**, it is recommended that the user regularly check that images from all cameras replay correctly.** Any potential problems with the cameras or recording system will then be detected as soon a possible, rather than continuing un-noticed until a critical incident needs to be recalled from the system.

Similarly, **when a DVD, CD or USB backup has been created you should check that it plays back correctly**, before the images on the hard drive in the M-series DVR become over-written. The backup may be checked by either by playing it on the M-series DVR or on a PC.

1.7 Care of the Hard Drive(s)

A hard drive is a delicate mechanical item that should be handled with care. Before moving a M-series DVR that has been powered up, or removing a hard drive, remove power and **wait for 30 seconds for the drive to stop spinning**. This is a precaution to avoid possible damage to the hard drive.

1.8 Critical Alerts

The M-series DVR constantly monitors the hard drive, camera inputs and system so that detected fault conditions will be reported to the user as soon as possible by means of a red “critical alert” message on the top left of the screen. Critical alerts are also added to the event list.

- To cancel a critical alert, press the **FIND** key several times until the **Critical** event screen is displayed. In the case of a Vi-M1, access events via the menu by pressing the **SEL** key and navigating the menu with **up**, **down** and **SEL**.
- When viewing the events, use the **up**, **down**, **left**, **right** keys to scroll through the lines and pages. If there are lots of events, you can press **DEFAULT** to see latest alerts, and press **DEFAULT** again to see earliest. Press **SEL** to cancel the currently elected critical alert. If there are a lot of critical alerts to cancel, they can all be cleared in the Alarms menu
- If critical alert condition persists, the red message will re-appear indicating that a fault exists that needs attention.

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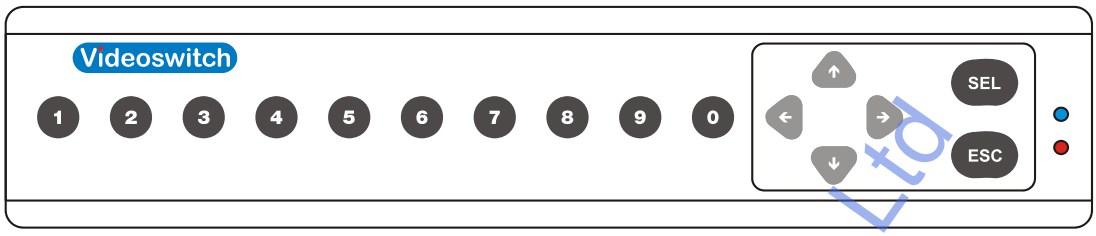
2 Control

2.1 Mini Keypad



The Vi-M1 has a mini-keypad with the key layout as above. All functions can be controlled by the 16 keys provided. Two functions are achieved by holding down the SEL or ESC key for 1 second:

Names of keys used	Keypad legend	**Used for**
number	1 2 3 4 5 6 7 8 9 0	Select cameras and enter numbers when in the menu
right	→	Play forwards in playback mode, navigate in menu
left	←	Go back in play mode, navigate in menu
up	↑	Go back in play mode, navigate in menu
down	↓	Pause in play mode, navigate in menu

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SEL	SEL	Enter root menu or select or confirm within the menu
ESC	ESC	Escape from current menu level to prior level
DEFAULT	SEL Hold for 1 second	Set a menu setting to default value, set a TAG in the event log.
EXIT	ESC Hold for 1 second	Exit from menu, go to live mode

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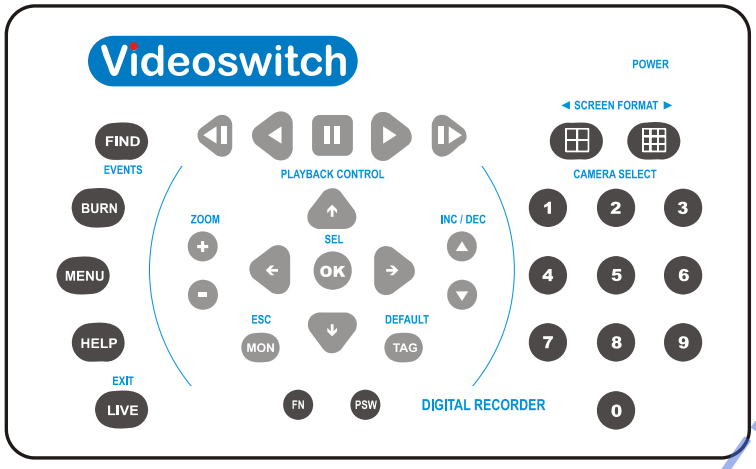
2.2 Standard Keypad



The Vi-M2, Vi-M3 and Vi-M4 have a standard keypad with the key layout as above. All functions can be controlled by the 35 keys provided:

Names of keys used	Keypad legend	Used for
Number	1 2 3 4 5 6 7 8 9 0	Used to select cameras and enter numbers when in the menu
Right	→	Pan dome right in live mode, navigate in menu
Left	←	Pan dome left in live mode, navigate in menu

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Up		Tilt dome up in live mode, navigate in menu
Down		Tilt dome down in live mode, navigate in menu
SEL		Enter root menu or select or confirm within the menu
ESC		Escape from current menu level to prior level
DEFAULT		Set a TAG in the event log in live or play mode, set a default value in menu mode
FIND		Press once for date/time search, press again for event log, system log and critical alert log
BURN		Press once for incident and burn (backup) screen. Press again for incident list.
MENU		Enter main menu
HELP		Show status screen. Press for subsequent next status screens
EXIT		Exit from menu, go to live mode
FN		Enter function screen
PSW		Enter password screen
Plus		Select title options in menu, zoom dome
Minus		Select title options in menu, zoom dome

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Inc		Select next camera, insert space when editing title in menu
Dec		Select prior camera, delete character when editing title in menu
Play_Back		Step back in playback mode
Step_Back		Step back in playback mode
Pause		Pause playback
Step_Forward		Step forwards in playback mode
Play		Play forward in playback mode
Quad		Display camera 1-4 on the main monitor. Press again to display the next four cameras (if present)
Multi-screen		Display camera 1-9 on the main monitor. Press again to display cameras 1-16 (if present)

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2.3 Live Viewing

On a standard keypad, press this **LIVE/EXIT** key to enter live mode:

On a mini-keypad, press the **ESC** key and hold for 1 second to enter live mode:

1.1.1 Viewing Full Screen Images

To select cameras 1 to 9 for viewing press the required number key and wait a moment for the camera to select (or press two number keys 01, 02, 03 etc in fairly quick succession)

To select any cameras 10 to 16, press two number keys 10, 11, 12, 13, 14, 15 or 16 in fairly quick succession.

You can also select cameras using the **Inc** and **Dec** keys

---

1.1.1.1 Quad Display

Select quad display on the main monitor by pressing the Quad key. Cameras 1, 2, 3 and 4 will be displayed together.

Press again to see cameras 5, 6, 7 and 8. Successive presses will select the next set of four camera images.

Note that on a mini-keypad there is no Quad key. In this case, press the ESC key to cycle through the various screen modes.

Press a number key to revert to full screen display of one camera.

1.1.1.2 Multi-Screen

Select quad display on the main monitor by pressing the Multiscreen key. Cameras 1-9 will be displayed together.

Press again to see cameras 1-16. Successive presses will step between the modes.

Note that on a mini-keypad there is no Multiscreen key. In this case, press the ESC key to cycle through the various screen modes.

Press a number key to revert to full screen display of one camera.

1.1.2 Spot monitor(s)

- On a standard keypad, press the **MON** key to select the required monitor.
- On a mini-keypad, press and hold the **ESC** key to select the required monitor.
- The selected monitor is indicated on bottom right of screen prior to the camera number. If no monitor is indicated, then it is the main monitor that is selected.

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- Having selected the required monitor, select the camera to be displayed by pressing the **number** keys

1.1.3 Tagging Images

- If you something occurs that you may wish to go back to, press the **TAG** key to create an event in the alarms event log
- In the case of a mini-keypad (Vi-M1) press and hold the **SEL** key to create a tag.

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2.4 Playback

- If there is a DVD or CD that has previously stored images on it in the DVD drive, the M-series DVR will replay from the DVD or CD
- If there is a USB memory stick that has previously stored images on it plugged into one of the USB ports, the M-series DVR will replay from the USB memory stick
- If there is no DVD, CD or memory stick inserted, the M-series DVR will replay from the built-in hard drive(s).

On a standard keypad, press one of the play keys to enter play mode:

Play_Back		Step back in playback mode
Step_Back		Step back in playback mode
Pause		Pause playback
Step_Forward		Step forwards in playback
Play		Play forward in playback

On a mini-keypad, press one of the arrow keys (when not in menu):

right		Play forwards
left		Go back in play mode
up		Go back in play mode
down		Pause in play mode

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3 Navigation

3.1 Menus

- The menu system in this DVR allows many aspects of it operation to be customised to suit a specific installation
- In the case of a Vi-M1 which has a mini-keypad, the root menu (accessed by pressing **SEL**) takes the place of the dedicated functions keys on the standard keypad.
- The factory default settings that this unit is shipped with provide a standard configuration that records all connected cameras continuously with a data retention period of 31 days.
- The factory defaults may be restored at any time via the CONFIGURATION menu.

3.2 Mini-Keypad

When a mini-keypad is used (on a Vi-M1) the menu is always entered at its root level by pressing the **SEL** key:

The required sub-menu may be selected using the **up** and down keys, pressing the **SEL** (or **right**) key to enter it:

- Find
- Burn
- Menus
- Help
- Function
- Password

3.3 Standard Keypad

In the case of a standard keypad, dedicated function keys are provided to bypass the root level of the menu and take you straight into the appropriate submenus:

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3.4 Summary of keys used in menus

Key name	Key legend	Action
SEL	SEL or OK	Enter the root of menu system, includes extra functions (Mini-keypad). Selects an item for editing and also confirm changes
MENU	MENU	Enter the menu system at menu level (Standard keypad)
Up	↑	Select the prior menu item or scroll a value when editing
Down	↓	Select the next menu item or scroll a value when editing
Right	→	Go a level deeper into the menu or move cursor when editing
Left	←	Come out of a level in the menu or move cursor when editing
DEFAULT	Press and hold for 1 second SEL or TAG	Set the default setting of a menu item
ESC	ESC or MON	Escape from a menu level or escape from editing a value without saving
EXIT	Press and hold for 1 second ESC or LIVE	Leave menu completely. Any changes will be saved.

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4 Find

- On a mini-keypad, **Find** is accessed by pressing **SEL** to enter the root menu, then using **up** and **down** to select the required row, followed by **SEL**
- On a standard keypad, **Find** may be accessed directly by pressing the **FIND** key. Press **Find** key again to switch between different find options.

4.1 Date/Time

- Use **left** and **right** to move the cursor
- Use **up** and **down** to scroll the digits
- A search will take place each time you change a digit and the image will be displayed
- Press **DEFAULT** for the latest available image
- Press **DEFAULT** again for the earliest available image

4.2 Events

There are a number of event logs which store potentially large numbers of events. As you scroll though these logs, the corresponding image is recalled and displayed on the screen.

1.1.4 Alarm

This log records alarm and activity events. It also logs **Tag** events which are manually generated events.

1.1.5 System

This log record system events such as Ethernet access, log-ins and other normal system activities.

1.1.6 Critical

This log record critical alerts which are error events. An example is a hard drive failure. Events that have not been acknowledged are shown in red.

- Select the row using **up**, **down**, **left** and **right**
- Press **SEL** to cancel event
- If critical alert condition persists, another alert will be raised
- If there are a lot of critical alerts, they can all be cleared at once in the **Alarms** menu

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5 Burn

- On a mini-keypad, **Burn** is accessed by pressing **SEL** to enter the root menu, then using **up** and **down** to select the burn required row, followed by **SEL.** Press **ESC** to return to menu.
- On a standard keypad, **Burn** may be accessed directly by pressing the **BURN** key. Press **BURN** to switch between the incident edit and incident list

5.1 Edit Incident

This is an example of the edit incident screen.

- Use **up** and **down** to select rows
- Press **SEL** to start editing a row
- Use **up**, **down**, **left**, **right** or **numbers** to edit a row. Press **DEFAULT** to use current play location in **Start** and **End** or to set a default incident in **Duration of** 4 minutes
- Press **SEL** to finish edit mode

```
Burn Edit incident 1

   >Duration  0 Mins
    Start     Not Set
    End       Not Set

    USB/CD    CD
    Erase     Erase Not Required
    Proceed   Press OK

    Incident/Total 0 Mb / 0 Mb Incidents
    Free Space ----
```

To burn and incident

- Insert DVD,cd or USB memory stick.
- If media is incorrect, move cursor to **USB/CD** row, press **SEL,** press **up** or **down** to select media, press **SEL** to finish edit
- If media is to be erased prior to backup (no applicable with CD-R), move cursor to **Erase** row, press **SEL,** press **up** or **down** to select erase, press **SEL** to finish edit
- Move cursor ro **Proceed** row
- Press **SEL** to enter edit mode
- Press **up** to select **Yes**
- Press **SEL** to start burn (backup) process

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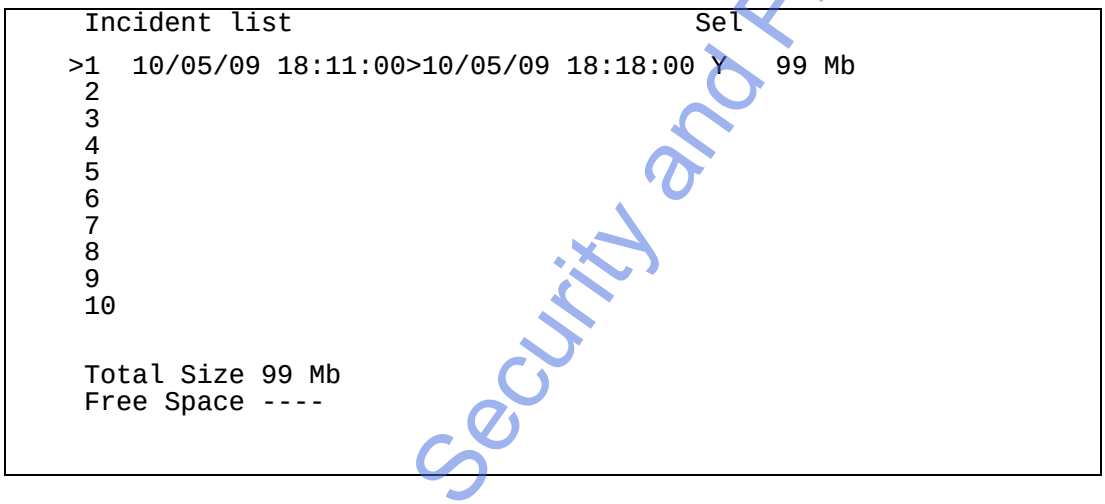
5.2 Incident List

The incident list allows you to set up to 10 separate incidents (sections of video) which then be backup up onto a CD or USB memory stick. If you do not want all the incidents, or the total size is too large, you can selectively select or deselect incidents using the **SEL** key.

Only thos incidents that have a **Y** in the Sel column will be backed up to DVD/CD/USB.

This is an example of the incident list screen.

- Use **up** and **down** to select an incident
- Press **SEL** to toggle whether an incident is selected for burn
- Press **Burn** to switch back to the edit incident screen, or press **ESC** to return to menu (when using a mini-keypad) so you can re-enter the edit incident screen.



Note that if you only ever burn individual incidents, you do not need to use the incident list screen.

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6 Menus

- On a mini-keypad, **Menus** is access by pressing **SEL** to enter the root menu, then using **up** and **down** to select the required row, followed by **SEL**
- On a standard keypad, **Menus** may be accessed directly by pressing the **MENU** key

Note that the menu items described in the following pages may differ slightly between models depending on which features are available in that model and what level of firmware is installed.

6.1 Date/Time

1.1.7 System date/time

Press **SEL** to start editing the date and time.

Enter the current date and time using the **number** keys.

Use the **left** and **right** keys to move between the digits as required if you do not want to re-enter the whole date and time.

The normal format is DD/MM/YY HH:MM:SS.

Press **SEL** when you have finished editing the date and time, or press **ESC** to cancel.

It is essential for the correct operation of this DVR that the correct date and time is set in its internal clock. All recorded images are date and time stamped so this information forms part of the recorded evidence.

Battery backup ensures that the clock continues working even when power is removed for short periods of time

Thel clock automatically moves forwards an hour during March and back an hour in October for daylight saving. No adjustment by the user is required when the clocks change. The times and dates suit most European countries.

1.1.8 Date format

Alternative date formats may be selected if required for display on the live and replay screens:

- DD/MM/YY
- MM-DD-YY
- YY.MM.DD

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6.2 Record

1.1.9 Record settings

This screen allows you to set all the video record parameters.

To change a setting:

- Use **up** and **down** to move the pointer to the required row,
- Press **SEL** to enter edit mode (value goes red). The setting can then be changed using **up** and **down** or **number** keys.
- Press **SEL** again to save the setting and get back the pointer. Alternatively, press **ESC** if you want to escape from edit mode without changing the setting.

An example of the record screen is shown here:

```
  Record Settings
>     Mode                     Auto
      Format                   2CIF
      Quality                  Medium
      Auto retention           31 days
                               1-8   9-16
      Custom rate per camera   --    --
      Alarm rate per camera    25    25
      Cameras fitted           ################
      Actual rate per camera    3.0   3.0
      Average image size       3.3 Kb
      Retention                72.0 days
```

1.1.1.3 Mode

The record mode may be set to these options:

- Auto — The record image rate is calculated automatically such that the video is retained for the number of days specified in the **Auto retention** setting before being overwritten. The actual rate per camera is shown so you can see what is being achieved. The rate also depends on the hard disc capacity, the format and the quality setting.
- Custom — If this mode, the record image rate is determined by the **Custom rate per camera** setting.
- Alarm — In this mode, the DVR only records when there is an alarm. When there is an alarm, it record at the rate specified by the **Alarm rate per camera** setting

1.1.1.4 Format

The record format may be set as:

- CIF — This is the lowest resolution, but offers maximum record rate of 25 pictures per second per camera. The record rate is fixed in this mode at the maximum
- 2CIF — This is an intermediate resolution and a good choice for most situations. The maximum record rate is half that available in CIF

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mode.

- 4CIF — This is the highest resolution (also known as D1) and provides the maximum detail in the recorded images. Because it depends on two interlaced fields, there can be interlacing artefacts displayed on replay, particularly with fast moving subjects. The maximum record rate is a quarter of that available in CIF mode.

1.1.1.5 Quality

As well as the resolution that is specified by the format, the degree of compression may be set in the quality **setting.** This affects the level of detail recorded. The higher the quality, the larger the image sizes and the slower the record rate for a given number of days image retention.

1.1.1.6 Auto Retention

If **Auto** mode this option specifies the number of days that the DVR will be able to retain video for before overwriting. Bear in mind that this is approximate, as the size of the compressed video images depends on what the cameras are looking at. The software continuously calculates the rate on the basis or hard disc capacity, image size, number of cameras and requested number of days image retention.

1.1.1.7 Custom Rate per camera

If you have selected **Custom** mode, set the **Custom rate per camera** to the rate that you require. The rate is set separately or each group of four cameras. Note that it is not possible to set the rate of individual cameras.

The **Actual rate per camera** is shown and this may be lower than the requested (if the specified rate is impossible). The estimated **Retention** is also shown so you can see if you have specified a rate that results in a suitable number of days data retention.

1.1.1.8 Alarm rate per camera

The **Alarm rate per camera** is the rate at which the DVR attempts to record when an alarm condition occurs. If a rate is specified that is not possible, the DVR will record as fast as it can.

1.1.10 Record audio

Specify here whether you want to record audio or not. There will be a small benefit in disc capacity if you do not require audio and turn this option off.

6.3 Display

1.1.11 Titles

Titles allow meaningful descriptions to be entered identify the DVR and the cameras.

1.1.1.9 Server

This text string describes the DVR or its location. This is useful when remotely accessing the DVR via Ethernet as it confirms the identity of the DVR.

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- Use the **left** and **right** keys to move the cursor, and the **up** and **down** keys to select the character.
- Use **DEFAULT** to erase the title completely or set back to Videoswitch
- When editing a title on a standard keypad, you can use the **Inc** and **Dec** keys to insert and delete characters

---

1.1.1.10 Camera Titles

- The **Plus** and **Minus** keys on a standard keypad allow you to select predefined titles when editing a camera title.
- Use the **left** and **right** keys to move the cursor
- Use the **up** and **down** keys to select the character.
- Use **DEFAULT** to erase the title completely or set back to Camera 1, Camera 2 etc.
- When editing a title on a standard keypad, you can use the **Inc** and **Dec** keys to insert and delete characters

1.1.1.11 Show Camera Titles

You can choose how the cameras are identified on the main monitor in the various screen formats. This can be useful to avoid cluttering the screen too much.

1.1.1.1.1 Full

Select whether you wish to identify the full screen camera by its number, by its title or not at all. Note that the camera number of the currently selected monitor is always displayed in the bottom right of the screen.

1.1.1.1.2 Quad

Select whether you wish to identify the QUAD cameras by number, by title or not at all.

1.1.1.1.3 x9

Select whether you wish to identify the 9-way multi-screen cameras by number, by title or not at all.

1.1.1.1.4 x16

Select whether you wish to identify the 16-way multi-screen cameras by number, by title or not at all.

1.1.1.12 Auto sequence (main monitor)

The cameras displayed on the main monitor may be sequenced automatically

1.1.1.1.5 Sequence Mode

Select whether you want random sequencing or normal sequencing.

1.1.1.1.6 Camera List

Specify her which cameras you want to be included in the sequence.

- Use the **left** and **right** keys to move the cursor

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- Use the **up** and **down** keys to select (block) or deselect (dash) cameras

1.1.1.1.7 Dwell times

A separate auto-sequencing dwell time may be specified for each camera in this part of the menu.

1.1.1.1.8 Dwell times (all)

An auto-sequencing dwell time may be specified for all cameras. This overrides the above individual dwell time setting

---

1.1.1.13 Auto sequence (spot monitor)

The cameras displayed on the spot monitor(s) may be sequenced automatically

1.1.1.1.9 Spot1

1.1.1.1.10 Sequence Mode

Select whether you want random sequencing or normal sequencing.

1.1.1.1.11 Camera List

Specify her which cameras you want to be included in the sequence.

- Use the **left** and **right** keys to move the cursor
- Use the **up** and **down** keys to select (block) or deselect (dash) cameras

1.1.1.1.12 Dwell times

A separate auto-sequencing dwell time may be specified for each camera in this part of the menu.

1.1.1.1.13 Dwell times (all)

An auto-sequencing dwell time may be specified for all cameras. This overrides the above individual dwell time setting .

1.1.1.14 Spot monitor options

1.1.1.1.14 Spot1

The spot monitor may be setup to automatically change camera or to change to auto-sequencing at different times of day.

6.3.1.1.1.1 Weekday spot daytime

Set the blocks on to indicate daytime hours during weekdays.

6.3.1.1.1.2 Weekend spot daytime

Set the blocks on to indicate daytime hours during weekends.

6.3.1.1.1.3 Day spot camera

This is the camera number that the spot monitor will display when the Spot Daytime starts, or if the unit powers up in the daytime.

6.3.1.1.1.4 Day sequence spot

This option specifies whether the spot monitor will auto-sequence when the Spot Daytime

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starts, or if the unit powers up in the daytime.

6.3.1.1.1.5 Night spot camera

This is the camera number that the spot monitor will display when the Spot Daytime ends, or if the unit powers up in the night-time.

6.3.1.1.1.6 Night sequence spot

This option specifies whether the spot monitor will auto-sequence when the Spot Daytime ends, or if the unit powers up in the night-time.

1.1.1.15 Power-up options

1.1.1.1.15 Main monitor format

Following power-up the main monitor screen format can be set to Full, Quad, x9 multi-screen or x16 multi-screen.

6.3.1.1.1.7 Sequence main

Following power-up the main monitor may be set to auto-sequence.

6.3.1.1.1.8 Main camera

Specify the full screen camera that will be displayed on power-up.

6.4 Alarms

1.1.12 Alarm inputs

The following menu items deal with the alarm contact inputs.

1.1.1.16 Alarm polarities

Alarm contacts may be set as **normally open** or **normally closed**.

Note that if you select **normally closed** and nothing is connected to the alarm input, the system will register an alarm.

1.1.1.17 Camera mapping

Normally Alarm1 maps to Camera 1, Alarm 2 maps to Camera2 etc.

The M-series DVRs support alarm mapping whereby each alarm input may be assigned to any camera. Some cameras may therefore have multiple alarm inputs associated with them.

1.1.1.18 Alarm timers

The alarms may be programmed to be operative only during particular hours of the day. These hours may be different for weekdays and weekends.

1.1.1.19 Weekday alarm times

Specify during which hours of each weekday the alarm inputs are active

1.1.1.20 Weekend alarm times

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Specify during which hours of the weekend the alarm inputs are active

1.1.1.21 Enable alarms all day

This menu option allows some or all cameras to have their alarms enabled all day, irrespective of the Weekday and Weekend alarm time settings.

1.1.13 Activity

Activity (movement) detection may be set for all cameras. The following parameters should be set:

- Zone — Use **DEFAULT** to turn all zones on or off. Use the **up**, **down**, **left** and **right** keys to move the cursor around turning zones on of off. Press **SEL** to toggle whether sones rae being turned on or off.
- Level — Press **zero** to bring control to this setting and enter a number 1-9 to specify the sensitivity (9 is most sensitive)
- Spatial — Press **zero** to bring control to this setting and enter a number 1-9 to specify the spatial sensitivity Spatial sensitivity determines how large an object has to be to be detected. A setting of 9 will be most sensitive and will detect small objects.

1.1.1.22 Activity timers

Activity detection may be programmed to be operative only during particular hours of the day. These hours may be different for weekdays and weekends.

1.1.1.23 Weekday activity times

Specify during which hours of each weekday activity detection is active

1.1.1.24 Weekend activity times

Specify during which hours of the weekend the alarm activity detection is active

1.1.1.25 Enable activity all day

This menu option allows some or all cameras to have their activity detection enabled all day, irrespective of the Weekday and Weekend alarm time settings.

1.1.14 Critical alerts

1.1.1.1.16 Videloss

Specify here which cameras should be present. If any lose video, a critical alert will be raised. Press **DEFAULT** to automatically set this to match the currently installed cameras.

1.1.1.1.17 Record stopped

Specify whether you want a critical alert to occur if record stops due to a disc or other fault.

1.1.1.1.18 Hard drives

Specify here which hard drives should be present. If a hard drive selected on this list fails, a

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critical alert will be generated.

1.1.15 Clear critical alerts

Critical alerts may be individually cleared (acknowledged) in the Critical alert event log. All critical alert can be clear her at once.

1.1.16 Erase event list

The event logs can be erased here. Use with care as the events cannot be retrieved once erased.

1.1.17 Pull-up and restore

This part of the menu deals with the pull-up of a camera on a monitor under alarm conditions.

1.1.1.1.19 Pull-up monitor

Specify here on which monitor an alarm camera should be displayed.

1.1.1.1.20 Pull-up hold time

When an alarm condition occurs the associated camera is displayed for this hold time, even if other cameras also have alarms meanwhile.

If other cameras have alarms these will then be displayed in turn, each one being shown for the specified hold time.

1.1.1.1.21 Pull-up sequence time

When multiple alarmed cameras exist, once the hold time has elapsed for each, they will start sequencing with a programmable sequence time.

1.1.1.1.22 Relay hold time

Whenever an alarm or activity event occurs, the alarm relay activates. When all alarm conditions have cleared, the relay will stay activated until the relay hold time has expired.

When the record rate is modified by alarms, this condition will also apply until the alarm relay deactivates.

1.1.1.1.23 Restore camera

Following the pull-up of one or more alarmed cameras, this setting determines whether the original pre-alarm camera is restored, or whether the last alarmed camera is left on the monitor.

1.1.18 Relay activation

1.1.1.26 Use relay1 for alarm

Relay 1 is normal is used to indicate that an alarm or activity state exists. Set this to **False** if you want to use the relay for another purpose, for example remote control of lights etc.

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1.1.1.27 Use relay2 for critical alert

Relay 2 is normal is used to indicate that a critical alert has occurred. Set this to **False** if you want to use the relay for another purpose, for example remote control of lights etc.

6.5 Network

Images from this DVR can be remotely viewed and menus accessed via:

- Local area network - connect to the Ethernet port.
- Broadband - connect a router to the Ethernet port.

1.1.19 IP address

If you wish to use the Ethernet port for local or Ethernet access, you need to give the DVR an IP address.

If the DVR is on a network with other computer equipment, a compatible number should be chosen. You may need to consult whoever is responsible for the network who can assign you a number.

If you are connecting only to a broadband router, the default IP address should be satisfactory. The router will also need setting. See our web site for details: www.videoswitch.co.uk

---

1.1.20 Ports

1.1.1.28 Command

The DVR has a port dedicated for control. The default is 9221 (press **DEFAULT**). The Vi-Viewer software that is used to view images remotely must specify this port in its setup. If a router is used it must also be set up to suit. See our web site for details: www.videoswitch.co.uk

1.1.1.29 Video

The DVR has a port dedicated for video. The default is 9222 (press **DEFAULT**). The Vi-Viewer software that is used to view images remotely must specify this port in its setup . If a router is used it must also be set up to suit. See our web site for details: www.videoswitch.co.uk

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1.1.21 Sub-net mask

Enter required subnet mask. Press **DEFAULT** for the default setting.

1.1.22 Gateway

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Enter required gateway. Press **DEFAULT** for the default setting.

1.1.23 MTU

The MTU may be set if necessary for compatibility with attached routers or computers. Normally this option is set to zero which indicates automatic mode (press DEFAULT).

6.6 Configuration

1.1.24 Language

Specify the langue you require for the menus.

1.1.25 Unit number

If you wish to address multiple units from a single keyboard, make sure each DVR has a different unit number. If multiple DVRS are cascaded, there must have unit number 1,2,3 etc.

1.1.26 Display

1.1.1.30 VGA resolution

If a VGA monitor is connected, set its native resolution here.

1.1.1.31 VGA gamma

Adjust this setting to get the best image

1.1.1.32 VGA motion

Adjust this setting to get the best image

1.1.1.33 Menu translucency

Menu may have either translucent or solid backgrounds. Set as preferred.

1.1.1.34 Boundary colour

The boundary or full screen and multi-0screen images may be set to off, black, dark grey, light grey or white. Set as required.

1.1.27 Camera inputs

1.1.1.35 Termination

Specify here whether camera inputs should be terminated with 75ohms. Normally

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termination should be on.

1.1.28 Passwords

1.1.1.36 Logged off user

1.1.1.1.24 Access rights

Specify the access rights that are to be given when a user is not logged in.

1.1.1.37 Named users

1.1.1.1.25 User1..User4

6.6.1.1.1.1 Name

A user name may be specified here

6.6.1.1.1.2 Password

Specify the password (6 numbers)

6.6.1.1.1.3 Access rights

Specify the access rights that are to be given when a user is not logged in with this password.

6.6.1.1.1.4 Login timeout

Specify the timeout period for this password. If no keypresses occur during this period, the user will be automatically logged out.

1.1.29 Coverts

Covert cameras are cameras that are recorded but not normally displayed. If any cameras are set to covert, they may only be viewed if a user is logged on with sufficient rights. He also has to enable coverts in the **Function** menu.

1.1.1.38 Covert cameras (Main)

Specify here which cameras are to be covert (hidden) on the main monitor.

1.1.1.39 Covert cameras (Spot1)

Specify here which cameras are to be covert (hidden) on spot 1 monitor.

1.1.30 Restore factory defaults

Restore all menu settings to the factory defaults.

1.1.31 Restore the system

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Restart the system. This is equivalent to power-cycling the DVR and may occasionally be required following software upgrades.

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7 Help

- On a mini-keypad, **Help** is access by pressing **SEL** to enter the root menu, then using **up** and **down** to select the required row, followed by **SEL**
- On a standard keypad, **Help** may be accessed directly by pressing the **HELP** key

7.1 Status/Config

1.1.32 Config

This is an example of the **config** screen, which shows the configuration of the DVR.

Press **left** or **right** to see other help screens.

```
Config

Model              Vi-M316 (16 cameras)
Cards fitted       CM- C-- CM- C-- ---
Capacity           992 Gbytes
Serial number      00298350
Firmware ID        1818
Logic ID           7


Unit number        None
IP address         192.168.16.67
MAC address        00:00:49:09:1A:DC
Ethernet           100 Mb/s HDX
```

1.1.33 Status

This is an example of the **status** screen which shows the status of video, alarms, activity etc.

Press **left** or **right** to see other help screens.

```
Status

Video        ##################
Alarms        ----------------
Activity     ----------------
Relay timer   ----------------
Relays        --

Load         [=        ]
Temperature   49C
MMC status    OK
```

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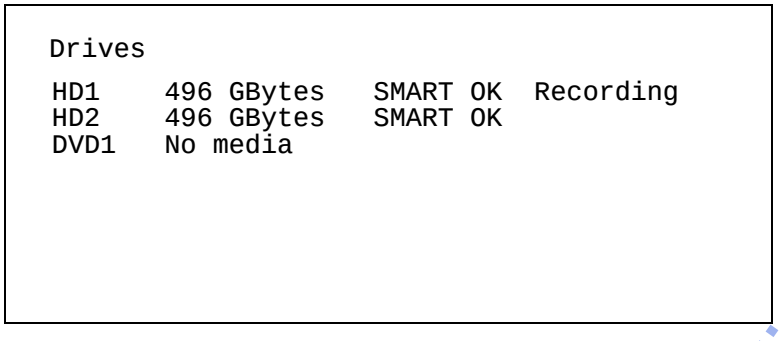
1.1.34 Drives

This is an example of the **drives** screen which shows a summary of all the fitted drives.

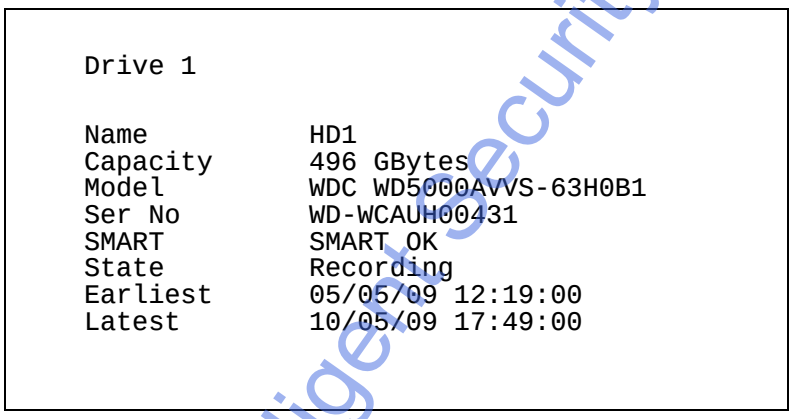
Press **left** or **right** to see other help screens.



1.1.35 Drive1

This is an example of the **Drive 1** screen which shows details of this particular drive. Similar screens exist for each drive.

Press **left** or **right** to see other help screens.



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1.1.36 Record

This is an example of the **record** status screen which shows details of the current record parameters.

Press **left** or **right** to see other help screens.

```
Record

Current record mode        Auto
Record rate                48/100 pps (2CIF)
Cameras                    ################
Average image size         3.1 Kb
Rate per camera (1-8)       3.0 pps
Rate per camera (9-16)      3.0 pps

Image retention            76.0 days
Earliest                   05/05/09 12:19:00
Latest                     10/05/09 17:52:50
```

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8 Function

- On a mini-keypad, **Function** is access by pressing **SEL** to enter the root menu, then using **up** and **down** to select the required row, followed by **SEL**
- On a standard keypad, **Function** may be accessed directly by pressing the **FN** key

Functions are used to alter temporary settings such as auto-sequencing or relay status.

- Press **up**, **down**, **left** and **right** to select a function (or type in a **number**)
- Press **SEL** to toggle the state or action the function

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9 Password

- On a mini-keypad, **Password** is access by pressing **SEL** to enter the root menu, then using **up** and **down** to select the required row, followed by **SEL**
- On a standard keypad, **Password** may be accessed directly by pressing the **PSW** key

---

- Type in a password,, comprising up to 6 **numbers**
- Press **SEL**
- If the password matches one of those set in the menu, a message will report that you are logged in. Press **SEL** with no password (or zero) to log out

---

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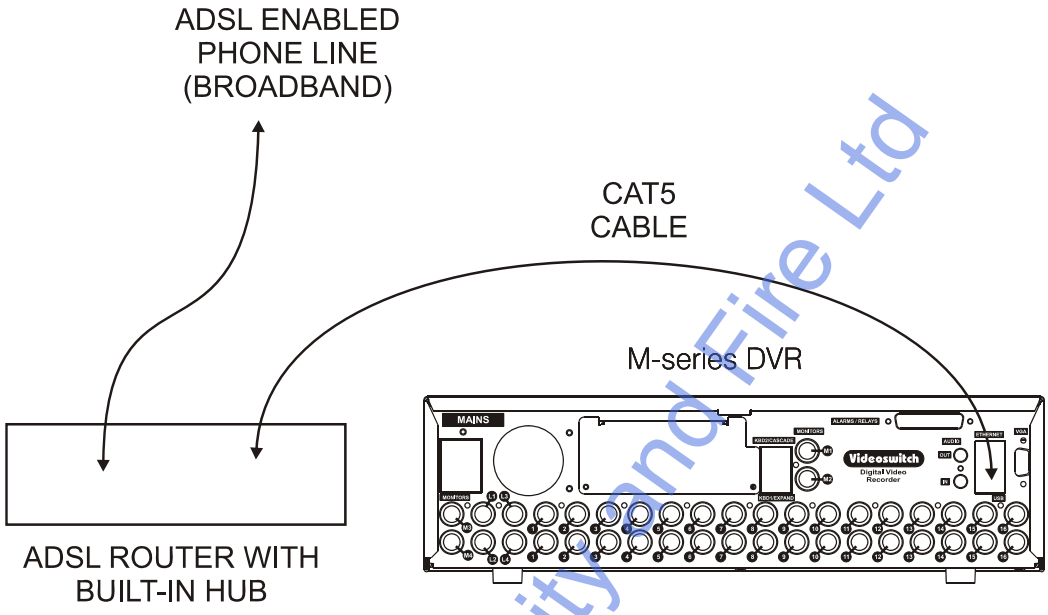
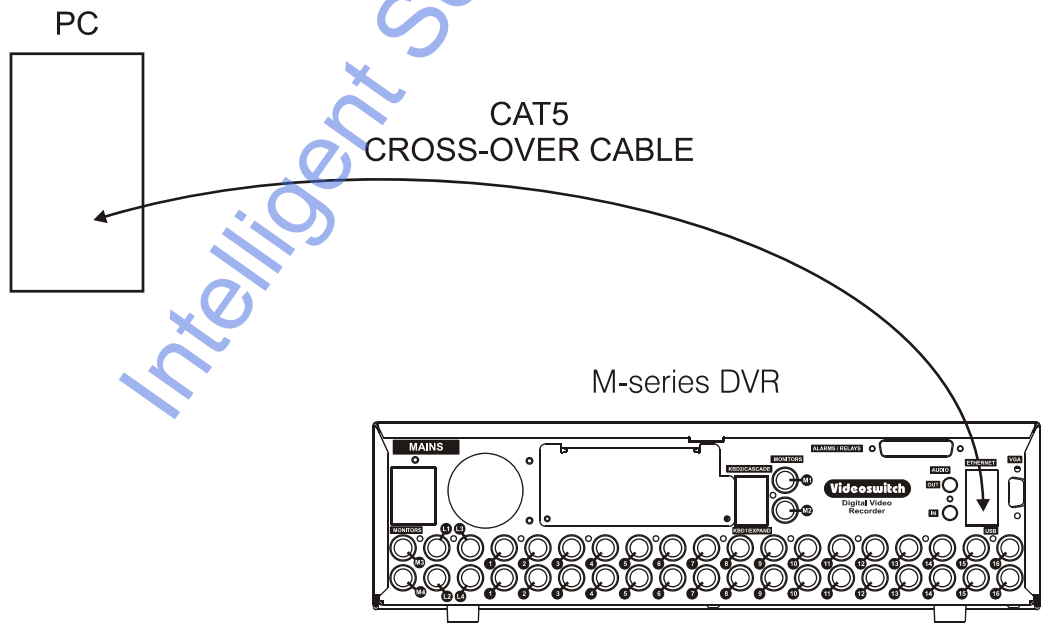
10 Connections

10.1 Ethernet connection to Broadband



10.2 Ethernet connection to a PC



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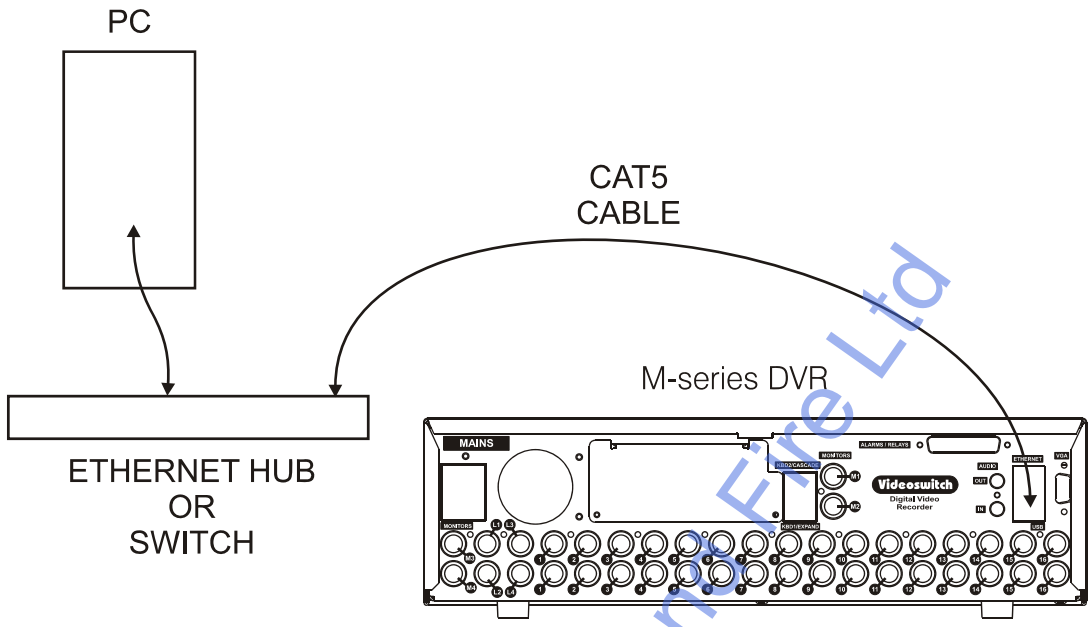
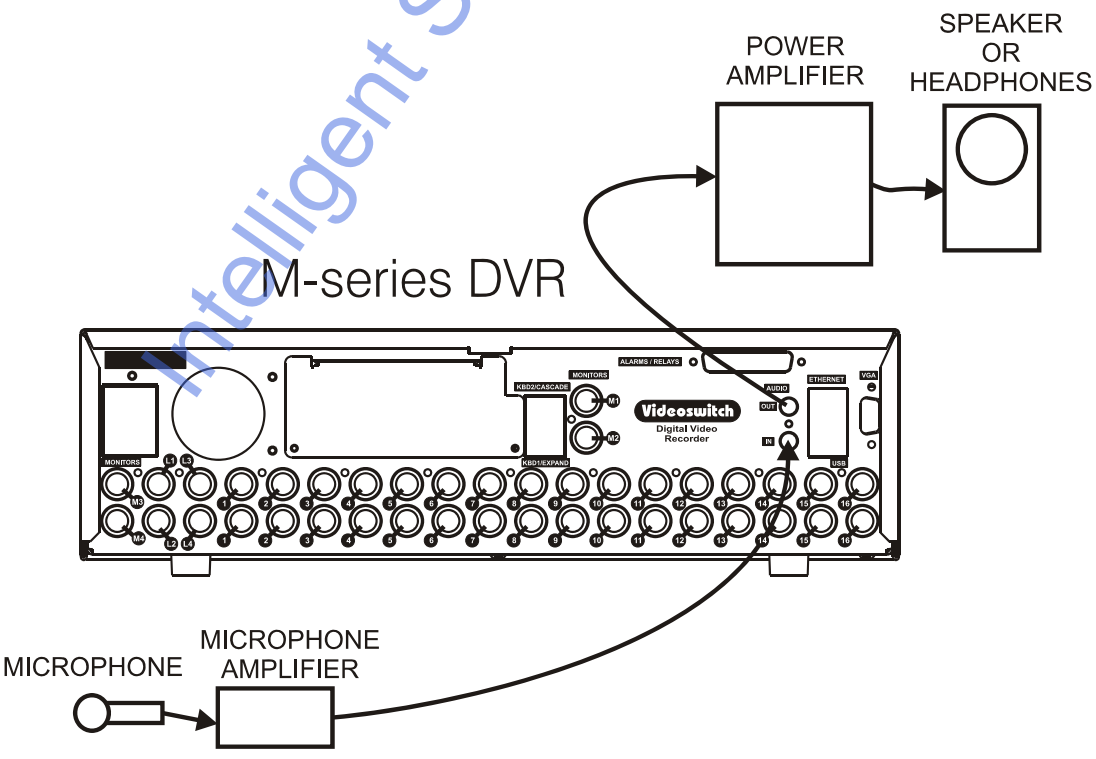
10.3 Ethernet connection to a LAN



10.4 Audio

- Connect a microphone via a microphone amplifier to the LINE input.
- The LINE output is used to drive either a speaker with a built-in amplifier or a separate amplifier and speaker.



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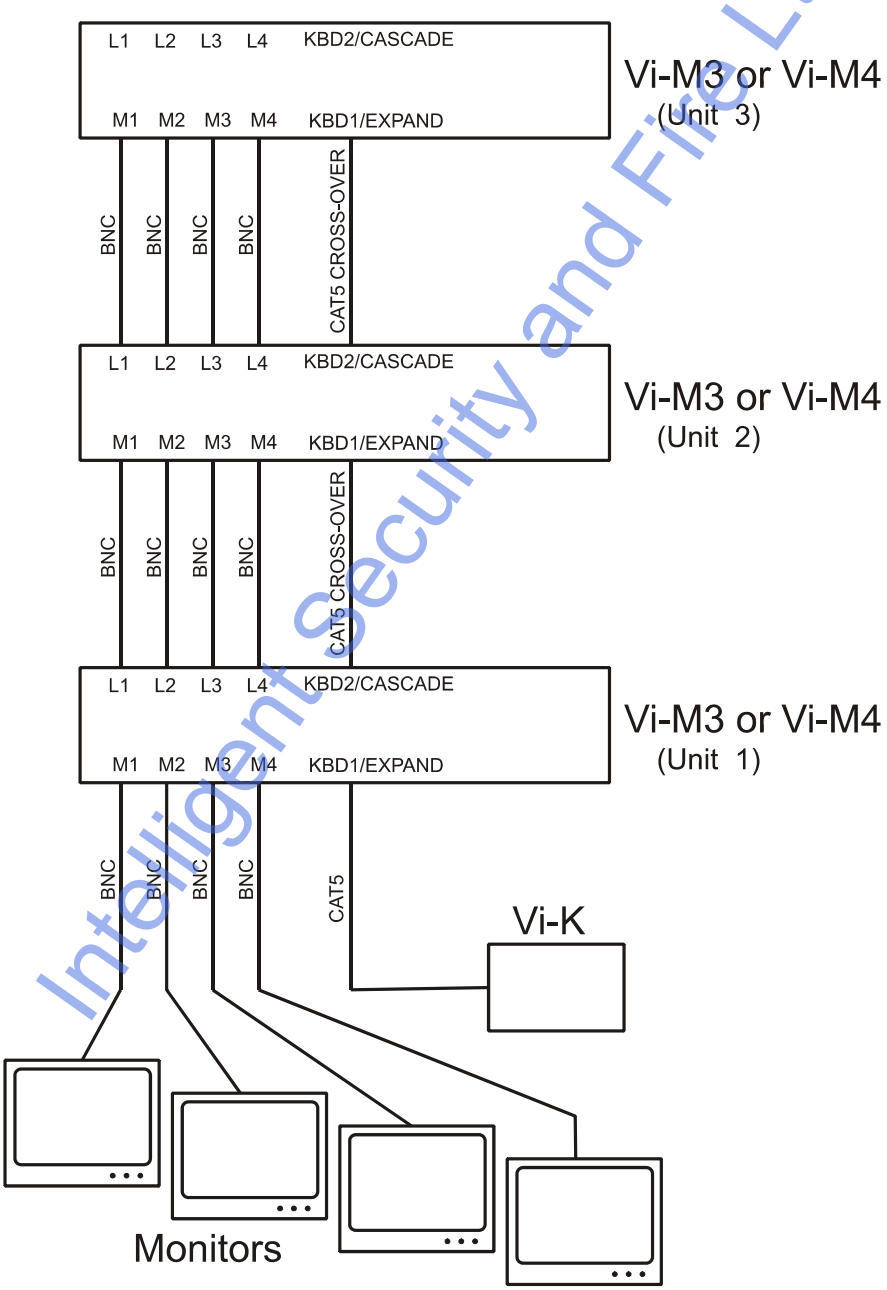
10.5 Multi Unit Cascading

Up to 16 M-series DVRs can be cascaded to cater for up to 256 cameras. Built-in matrix switching allows eny DVR to display on any monitor. Cameras are selected by entering 1 to 256 on the Vi-K1, Vi-K2 or Vi-K3 keyboard.

Note: check with Videoswitch technical support that you have a firmware version that supports this feature.

This diagram shows how three units may be cascaded. Further units may be added in the same manner:



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11 Technical Data

11.1 Accessories Included

- M-series DVR
- Mains Cable
- External PSU (in case of Vi-M1)
- Vi-X16 Alarm Break-out module (Vi-M3, Vi-M4)
- Vi-X17 Relay/Dome Break-out Module (Vi-M1, Vi-M2)
- Hard Drive Keys (x2)
- Manual
- CAT5 Ethernet Cable
- Blank CDs

11.2 Changing the Hard Drive

Hard drives are sensitive mechanical devices that may be damaged by shock or vibration. Always protect them from shock and vibration when transporting and do not move them within 30 seconds of being powered up.

Remove power from the M-series DVR before removing the hard drive. **Wait for 30 seconds for the drive to stop spinning** before moving the DVR or removing the hard drive. Moving a drive that is still spinning can damage it.

1.1.37 Changing a hard drive - Vi-M1

- Remove power from the DVR
- Unlock the cover of the DVR using the key supplied with the DVR. Insert the key, and turn it *anti-clockwise* to unlock the cover
- Slide the cover back about 6mm millimetres to disengage the tabs at the rear and the front
- Lift of the whole cover so the inside of the DVR is exposed
- Unscrew the thumb screws on the hard drive taking care not to damage any of the parts within the DVR
- Remove the hard drive
- Replace the hard drive and tighten the two thumb screws to secure it
- Replace the cover approximately 6mm back from its fully closed position
- Turn the key *clockwise* to lock the cover, pushing it forwards at the same time
- R-apply power to the DVR and wait for it to re-boot
- If the drive has not been pre-formatted, you will be asked if you want to format it.

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Press SEL to confirm and wait approximately 15 minutes before the DVR is able to start recording. It may up to 1hour per Tbyte to completely format the drives. See Drive1 information screen to monitor progress.

1.1.38 Changing a hard drive - Vi-M2/Vi-M3/Vi-M4

- Remove power from the DVR
- The hard drive bay requires a special key to unlock it. This is supplied with the M-series DVR. Insert the key, and turn it *clockwise* to unlock the drive.
- Hinge open the door to the drive bay and remove it completely, taking care not to damage the fans or other parts
- Locate the drive you wish to remove: Hard drive 1 is the upper one and Hard drive 2 is the lower one
- Pull the metal tab on the metal plate under the hard drive to be removed and slide out the drive. Take care the drive does not fall out as it is only retained by a hinged bracket
- Open the hinged bracket so that the hard drive can be removed
- Put the new drive onto the plate and close the hinged bracket so that the drive is located by all four tabs
- Slide the plate back into the bay, taking care that it lines up correctly with the correct slot. Note that the bay is tapered, so it starts a loose fit and gets snug as it is pushed fully home.
- Change the other drive if required in the same way
- Locate the tabs on the bay door into the corresponding holes on the right side of the drive bay.
- Hinge the door closed, making sure the key is in the unlocked position and that the connector engages with its mating half.
- Turn the key *anti-clockwise* to lock the door
- R-apply power to the DVR and wait for it to re-boot
- If the drive has not been pre-formatted, you will be asked if you want to format it. Press SEL to confirm and wait approximately 15 minutes before the DVR is able to start recording. It may up to 1hour per Tbyte to completely format the drives. See Drive1 and Drive 2 information screen to monitor progress.

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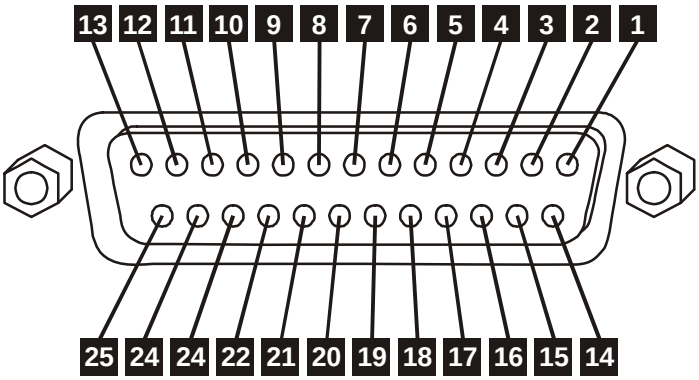
1.1.39 Alarms, Domes, Relays



Pin Number	Signal
1	Alarm Input 1
2	Alarm Input 2
3	Alarm Input 3
4	Alarm Input 4
5	Alarm Input 5
6	Alarm Input 6
7	Alarm Input 7
8	Alarm Input 7
9	Alarm Input 8
10	Alarm Input 10
11	Alarm Input 11
12	Alarm Input 12
13	Alarm Input 13
14	Alarm Input 14
15	Alarm Input 15
16	Alarm Input 16
17	Spare
18	+9V output
19	Dome 1 output: RS485 + (A)
20	Dome 1 output: RS485 – (B)
21	Dome 2 output: RS485 + (A)
22	Dome 2 output: RS485 – (B)
23	Relay 2 output, normally open
24	Relay 1 output, normally open
25	Alarm Common (GND)

Note: The Vi-X16 or Vi-X17 breakout adaptors supplied with the Vi-M1, Vi-M2, Vi-M3 and Vi-M4 provide a convenient means of making connection to the alarm, dome and relay signals via screw terminals.

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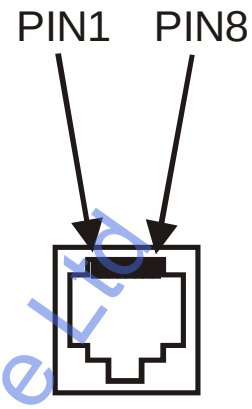
1.1.40 Main Keyboard Port

Physical: RJ45 (lower connector)

Electrical: RS485



Pin Number	Signal
1	RS485 Input+ (A)
2	RS485 Input- (B)
3	RS485 Output+ (A)
4	+9V output for Keyboard
5	GND
6	RS485 Output- (B)
7	Twisted-Pair Video+
8	Twisted-Pair Video-

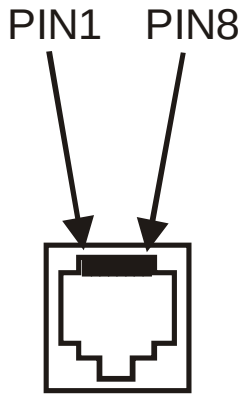
Note:

A standard CAT5 patch cable may be used to connect the M-series DVR to the optional Vi-K1, Vi-K2 or Vi-K3 keyboard.

1.1.41 Spot Keyboard/Cascade Port

Physical: RJ45 (upper connector)

Electrical: RS485



Pin Number	Signal
1	RS485 Input+ (A)
2	RS485 Input- (B)
3	RS485 Output+ (A)
4	+9V output for Keyboard
5	GND
6	RS485 Output- (B)
7	Twisted-Pair Video+
8	Twisted-Pair Video-

Note:

A standard CAT5 patch cable may be used to connect the M-series DVR to the optional Vi-K1, Vi-K2 or Vi-K3 keyboard.

This port may be configured as a cascade port for linking to the Main keyboard port of another DVR. In this case a CAT5 cross-over cable is used.

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11.3 Specifications

1.1.42 Storage

Hard drives	SATA interface. 250 Gbytes to 2 Tbytes (and more as larger drives are developed)
Number of hard drives	Vi-M1: 1 hard drive, Vi-M2, Vi-M3, Vi-M4: 2 hard drives
CD/DVD writer	Backup to DVD or CD. Play without installing viewer. CD may also be used to upgrade firmware.
USB	Backup to USB memory stick. Play without installing viewer.

1.1.43 Digital recording/Replay

Camera inputs	4, 8, 12 or 16, with programmable titles (16 characters)
Image Retention	1 to 999 days, image rate calculated automatically (custom mode allows rate to be specified)
Colour/Monochrome	Auto sense
Gain, Brightness, Colour	Auto
Record Resolution	CIF: 352 x 288 pixels x 16.8 million colours
	2CIF: 704 x 288 pixels x 16.8 million colours
	4CIF: 704 x 576 pixels x 16.8 million colours
Image size	6k to 40k bytes, dynamically variable, typically 8K for CIF
Compression method	MPEG4
Hardware/Software	Embedded processor, Linux, proprietary Videoswitch software
Simultaneous processing	Record, Live, Play, Remote and backup
Image authentication	Each image is tagged with time, date, image number and other information and is protected with a digital security signature for authentication.
Video inputs	0.5 to 1V pk-pk, 75 Ohms (switch able via menu), composite PAL (BNC), all inputs have loop-through BNCs
Loop-though BNC connectors	On Vi-M3 and Vi-M4
Maximum record rate	100 CIF pictures per second (Vi-M1)
	200 CIF pictures per second (Vi-M2 and Vi-M3)
	400 CIF pictures per second (Vi-M4)

1.1.44 Display

Main monitor output	(a) Composite (BNC), 1V pk-pk composite PAL
	(b) VGA monitor output
Spot monitor outputs	BNC, 1V pk-pk composite PAL

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Main monitor display modes	Full screen, quad, 9-way and 16-way split (16 camera models only)
Auto Sequencing	1-99 seconds, full and quad, main and spot monitors
Covert (hidden)	any cameras may be hidden from view on the monitors

1.1.45 Control and Interface

Standard Keypad	35 single function keys (Vi-M2, Vi-M3 and Vi-M4)
Mini Keypad	14 single and 2 dual function keys (Vi-M1)
Remote keyboard Inputs	RJ45, RS485, 9600-baud (1 start, 8 data, 1 stop) data, with built-in balun for twisted pair video connection to remote keyboards with attached monitors.
Spot monitors	4 camera models – no spot monitor output is available
	8 camera models – 1 spot monitor
	12 camera models – 2 spot monitors
	16 camera models – 3 spot monitors
Passwords	4 passwords with fully programmable rights. Also programmable rights when not logged on.
Search modes	Date/time search, sweep, alarm, system and cricical event log
Timers	Alarm and activity (by hour for weekdays and weekend)
Audio	Dual channel audio, 8kHz bandwidth
Line input/output	3.5mm stereo jack connectors, -30dB level, 47k Ohms
Audio sensitivity control	30db range, via menu
Alarm inputs	16 inputs, suit normally open or normally closed volt-free contacts, inputs mapped
Activity detection	16 x 12 zones, programmable sensitivity
Relays	2 relays
Relay Contact Rating:	24Vdc, 200mA max normally open or closed
Alarm/activity response	Pull-up full screen display, maximum record rate
Events logs	Alarms, System, Critical
Incident list	Up to 10 incidents may be saved onto one DVD, CD or USB memory stick
Watchdog timer	In the event of any unexpected condition, the system will automatically restart

1.1.1.40 Dome Control

Interfaces	RS485 (x2), Up-the-Coax (x16)
Telemetry (coax)	BBV
Telemetry (twisted pair)	RS485, RS232 and 20mA. Protocols include Videoswitch VXP-4, JVC, VCL, BBV, Dennard, Sanyo, Samsung, Forward Vision, Mercer, Molynx/Bewator, Merit-LiLin, Borsatec, Pelco-D

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1.1.1.41 Remote Viewing

Ethernet	100baseT, TCP/IP, suitable for connection to broadband router or LAN. Software supplied.
Ethernet bandwidth	Depends on record rate, image size, number of images being viewed and number of connections. Typically in the range 2Mbits/sec to 10Mbits/sec.
Remote viewing software	Vi-Viewer or Vi-ViewerPro may be used on a PC running Windows 2000, Windows XP or Windows Vista

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1.1.46 Power, Physical & Environmental

Mains Power input	90-135 Vac 2 Amps or 180-265 Vac 1 Amp, 47-63Hz
Temperature	5 to 35deg C (operating), -10 to 40deg C (storage)
Humidity	5 to 95% non-condensing

Vi-M1

Dimensions/Weight (Unit)	180mm x 65mm x 330mm (WxHxD), 3kg
Dimensions/Weight (Boxed)	275mm x 380mm x 475mm (WxHxD), 5kg

Vi-M2

Dimensions/Weight (Unit)	165mm x 200mm x 330mm (WxHxD), 6kg
Dimensions/Weight (Boxed)	275mm x 380mm x 475mm (WxHxD), 8kg

Vi-M3, Vi-M4

Dimensions/Weight (Unit)	355mm x 100mm x 390mm (WxHxD), 7kg
Dimensions/Weight (Boxed)	480mm x 295mm x 580mm (WxHxD), 9kg

1.1.47 Upgrades

Remote viewing Software	Remote viewing software (Vi-Viewer) is available on the Internet: www.videoswitch.co.uk. It is also copied onto the CD/DVD or USB device each time incidents are written.
Firmware upgrades	Firmware upgrades will be made available on CD and the Internet (free of charge)
Camera Upgrades	If you have fewer than the maximum possible camera inputs for the model, an upgrade modules may be purchased to enable the other inputs.
Hard Drive Upgrades	Hard drives are available to increase the drive capacity or for replacement in case of drive failure.

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1.1.48 CE Marking

This product is CE marked. It has been fully tested and complies with 89/336/EEC Electromagnetic Compatibility and 73/23/EEC Low Voltage directives, and with EN 60950:2000 safety standards.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

1.1.49 Ventilation

The M-series DVR Digital Recorder has ventilation holes in the base, front and rear. Using internal fans, the unit creates a continuous flow of air through the unit to control the temperature of the disc drives and other internal components.

The ventilation holes must not be obstructed otherwise the lifetime and reliability of the system may be affected.

1.1.50 Safety

For warranty and safety reasons, the cover of this equipment must not be removed. There are no user serviceable parts inside.

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Serial Number of M-series DVR

Notes

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12 Warranty Fax-Back

Please fill-in and fax or post this form (or a copy) back to Videoswitch. This will enable us you to inform you of free upgrades when they become available.

Serial Number of M-series DVR
(This is on the label under DVR and also in the config help screen)

Your Name

Company Name

Address & Email

Date Purchased

Purchased From

Fax to:
01252-851296

Or Send to:
Videoswitch, Ocean House, Redfields Industrial Park, Redfields Lane Church Crookham, Fleet, Hants GU52 0RD

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